Pipeline & Utilities Construction

OCTOBER 1991

International Pipeline Report

- World's Deepest Directional Drill
- Coal Slurry Line in Andes
- Papua New Guinea Oil Line
- International Pipeline Forecast

Pipeline & Utilities Construction

October 1991 Volume 46 Number 10A

On the cover: Track-mounted drills set blastholes to lay Chevron's 165-mile oil line in the highlands of New Guinea.

Page 24: Techint tackles the Andes Mountains to lay a coal slurry line from Los Broncos Mine to Santiago, Chile.

Page 36: The world's deepest shore approach was drilled at Texada Island as part of Pacific Coast Energy's Vancouver Island Natural Gas pipeline.

FEATURES

Suedrohrbau Blasts Path Across Hessen. 22

Techint Takes Slurry Line Through Andes. 24

New Guinea Highlands Challenge Chevron. 26

Deepest Directional Drill Surfaces at Texada. 30

New Solution for an Old Problem. 32

StraightLine Hits the Target in Holland. 34

Pipeline Forecast. 35

IPLOCA Convention Preview. 38

DEPARTMENTS

Construction News 7

Canadian Report. 11

International News 14

Mile Markers. 18

Equipment Supplier News. 19

Contracts Let/Utility Report. 43

New Equipment Up Close. 52

Special Classified. 54

RUGGED COMPACTS BREAK, LOAD AND DIG

Kubota's advanced technology means performance and durability in compact construction equipment.

Powerful Kubota diesel engines in our excavators provide from 8.5 to 59 HP of total reliability. The Kubota 3-pump hydraulic system offers excellent digging power and precise control when working in tight quarters. Standard equipment includes a strong and durable dozer blade, and an auxiliary hydraulic system that allows quick hook-up of many attachments like hydraulic hammers and augers. The optional extendible dipper stick is available to increase digging depth and reach. Steel or rubber tracks are available on most models.

Kubota's wheel loaders are articulated for maneuverability, and an oscillating frame compensates for rough terrain. Liquid cooled Kubota diesel engines range from 26.6 to 50 HP. The unique Kubota LST (Load Sensing Transmission) automatically adjusts drive speed and increases torque as needed in tough conditions. Electric shuttle shifting between forward and reverse enables smooth direction changes with no clutching or braking.

For more information, see your local Kubota Construction Equipment Dealer, or write to Kubota Tractor Corporation, P.O. Box 7020-CE, Compton, CA 90224-7020. Dealerships are available in selected areas.

Kubota assures top quality by designing and manufacturing all key components.

Kubota

Circle No. 140 on Card

Pipeline & Utilities Construction

President **OLIVER C. KLINGER, JR.**
Publisher **OLIVER C. KLINGER III**
Editor **WINSTON S. DERDEN**
Production Ed. **ELIZABETH S. ROSS**
News Editor **ALEX G. KANAKIS**
Circulation Mgr. **SHANNON L. LANGFORD**
Editorial Asst. **ANNE F. PATTERSON**
Editorial Asst. **KELLY J. PATTON**

Executive Offices

President **OLIVER C. KLINGER, JR.**
Publisher **OLIVER C. KLINGER, III**
3314 Mercer Street
Houston, TX 77027
(713) 622-0676
Telex: 203218-ACTH-UR
Fax: (713) 623-4768

Sales Representatives

SOUTHWEST **ROY MARKUM**
17 S. Briar Hollow Ln.
Houston, TX 77027
Tel.: (713) 627-9930
Fax: (713) 627-9191

MIDWEST **GARY BOEYER**
2046 Lake Shore Dr.
Michigan City, IN 46360
Tel.: (219) 872-3045
Fax: (219) 879-1194

EAST COAST **DICK MARTIN**
P.O. Box 98
Tennent, NJ 07763-0098
Tel.: (908) 431-2742

WEST COAST **FRANK CHAPMAN**
1000 N. Central Ave. #302
Glendale, CA 91202
Tel.: (213) 245-1888
Fax: (818) 241-6356

SOUTHEAST **GEORGE HODGSON**
5003 Brittany Dr. S. #3
St. Petersburg, FL 33715
Tel.: (813) 867-8750

EUROPE **JOHN LUCASSEN**
Akerdijk 150A
1171 PV-Badhoevedorp
Netherlands
Tel.: 31 20 65 96 22 6
Fax: 31 20 65 96 93 1

PIPELINE & UTILITIES CONSTRUCTION (ISSN 0896-1069) is published monthly by Oildom Publishing Co. of Texas, Inc., 3314 Mercer St., Houston, TX 77027. Second Class postage paid at Houston, Texas and additional mailing offices. Postmaster send notification (form 3579) regarding undeliverable magazines to PIPELINE & UTILITIES CONSTRUCTION, 3314 Mercer St., Houston 77027-6020; P.O. Box 22267, Houston, TX 77227-2267. Editions of this publication are available in microfilm formats. Send orders to: University Microfilms, Inc., 300 North Zeeb Road, Ann Arbor, MI 48106.

INTERNATIONAL PIPELINE FORECAST

Final figures for our annual International Pipeline Forecast paint a bright picture for pipeline expansion in many parts of the world. The totals show 22,188 miles planned for the 1991-92 period at a cost of $14.7 billion.

INTERNATIONAL PIPELINE FORECAST 1991-92

	Mileage	Est. Cost (Billions)
Gas Pipelines	14,030	$17.167
Crude Oil Lines	2,933	1763
Products Pipelines	5,225	.848
World Total	22,188	$21.778
Future Proposed Pipelines		
Gas Pipelines	29,142	4.622
Crude Oil Lines	4,589	3.336
Products Pipelines	1,876	.510
World Total	35,607	8.468

Crude Oil Pipelines

Sonatrach
Algeria
239 miles; 34 inches
Cost: $200,000,000
Hooud el Hanra to Skikda

Petrobas
Brazil
22 miles; oil line
Cost: $260,000,000
Sao Paulo to Santos

China National Oil Corp.
China
180 miles; 20 inches
Cost: $80,000,000
Zhongyuan field to Luoyang Henan refinery

Cuban government
Cuba
116 miles; 20 inches
Matanzas terminal to refinery at Cienfuegos

Conoco Ecuador, Ltd.
Ecuador
Dual 100 mile lines
Cost: $200,000,000
Oriente region

Kenya Pipeline Co., Ltd.
Kenya
225 miles; 8 inches
Cost: $100,000,000
Extend Mombasa-Nairobi line to Uganda border

Korea Ministry of Energy and Resources
Korea
540 miles; large diameter
Cost: $450,000,000
Western Pipeline: Yeosu to Seoul
Eastern Pipeline: Onsan to Seoul

Societe Cherifienne des Patroles
Morocco
115 miles; 14 inches
Cost: $8,000,000
Port of Mohammedia to Sidi Kacem refinery

Chevron Corp.
New Guinea
163 miles
Cost: $125,000,000
Kutubu to terminal at Gulf of Papua

National Nigerian Petroleum Corp.
Nigeria
308 miles; 12, 16 inches
Cost: $250,000,000
Port Harcourt to River Niger

Shell Petroleum Development Co.
Nigeria
7 miles; 8 inches
43 miles; 20 to 24 inches; Opukushi to Forcados
6 miles; 8 inches; flow station to Ogara
6 miles; 8 inches; to Kanbo manifold
Cost: $5,000,000

Chinese Petroleum Corp.
Taiwan
40 miles; 12 to 20 inches crude and products line to oil terminal
Cost: $5,000,000

Botas
Turkey
570 miles; large diameter
Looping of oil line from Iraq to Turkey

Products Pipe Lines

Ecopetrol
Colombia
119 miles; 6, 12 inches
Cost: $30,000,000
Three lines: Medellin to Rionegro; Facatativato Villavicencio; Sebastopol to Medellin

Ste. du Pipeline Mediteranee-Rhone
France
94 miles; 12 inches
Cost: $25,000,000
La Mede to Puget-sur-Argens

Petromin
Indonesia
650 miles; 10 inches
Cost: $75,000,000
Trans Java network

National Iranian Oil Co.
Iran
1,139.6 miles; 12 inches
Cost: $90,000,000
Arak to Malayer and Mamadan

Kenya Pipelines Co. Ltd.
Kenya
355 miles; 6 to 8 inches
Cost: $40,000,000
Nairobi to Kisumu Eldoret

Korea Petroleum Development Corp.
Korea
541 miles products line network
Cost: $25,000,000
Yosu and Onsan to Seoul

Nigerian National Petroleum Corp.
Nigeria
33 miles; 16 inches
Bonny terminal to Port Harcourt
309 miles; 12, 16 inches
Port Harcourt, Enugu, Auchi, to Benin City
Cost: $140,000,000

Petroleos Del Peru
Peru
52 miles; 4 to 6 inches
Aguaytia to Pucalpa Campo
30 miles; 3 inches
Aguaytia to Campo Verde
Cost: $3,000,000

Campsa
Spain
13 miles; 8 inches
Almodovar to Merida
60 miles; 10 inches
Alicante to Cartagena
90 miles; 10 inches
La Coruna to Vigo
Cost: $20,000,000

Corpoven SA
Venezuela
373 miles; medium diameter
Cost: $100,000,000
Puerto la Cruz reginery to Maturin, San Tome, Ciudad Bolivar, Puerto Ordaz, Puerto Ayacucho

Maraven SA
Venezuela
258 miles; 12 inches
Cost: $75,000,000
San Lorenzo, Lake Maracaibo, to El Vigia and Tachira

Lonrho PLC
Zimbabwe
135 miles; 10 inches
Cost: $30,000,000
Feruka to Harare

Natural Gas Pipelines

Abu Dhabi National Oil Co.
Abu Dhabi
93 miles; 28 inches
Cost: $50,000,000
Maqta to Al Ain

Algeria, Spain, Morocco
1,265 miles; 20 to 24 inches
Cost: $1,300,000,000
Algeria to Morocco under Mediterranean Straits, starting at Hassi R'Mel field in Algeria, ending at Seville, Spain. 300 miles: Hassi R'Mel field to Morocco; 900 miles through Morocco across Straits of Gibraltar to Seville

Sonatrach
Algeria
300 miles; 24 inches
Cost: $200,000,000
Hassi R'Mel field to Moroccan border

Auckland Gas Co.
Australia
40 miles; 1 to 6 inches
Cost: $5,000,000
Auckland area

Doral Resources
Australia
50 miles; medium diameter
Cost: $35,000,000
Onslow to Dampi Bunbury line

Gas & Fuel Corp.
Australia
16 mile gas line and distribution lines in Singapore

Gas & Fuel Corp. of Victoria
Australia
80 miles; various sizes
Cost: $20,000,000
Katnook to Portland, Victoria
209 miles; various sizes
Cost: $16,000,000
Melbourne, Victoria

Magellan Petroleum Corp.
Australia
375 miles
Cost: $150,000,000
Amadeus-Darwin line to Gove

Pipeline Authority of S. Australia
Australia
82 miles; 12 inches
Cost: $40,000,000
Wagga Wagga to Albury, New South Wales

Distrigaz
Belgium
65 miles; 16 inches
Cost: $5,000,000
Zeebrugge to Blaregnies

Energiebedrijven Schiedeland
Belgium
57 miles; 14 to 40 inches
Cost: $40,000,000
Replacement Antwerp area

YPFB
Bolivia
332 miles; 24 inches
Cost: $250,000,000
Santa Cruz to Brazilian border

Carbocol
Colombia
310 miles; 24 inches
Cost $800,000,000
San Cristobal, Venezuela to Bogota, Colombia

Ecopetrol
Colombia
58 miles; 20 inches
Cost: $30,000,000
Dibulla to Ballenas

Promigas
Colombia
621 miles; 20 to 24 inches
373 miles; 20 inches
248 miles; 24 inches
Cost: $250,000,000
Dibulla to Ballenas

Dansk Olie Og Naturgas
Denmark
67 miles; 10, 12, and 30 inch lines
Cost: $5,000,000

Dubai Natural Gas Co
Dubai
200 miles; large diameter
Cost: $150,000,000
Qatar's North field to Jebel Ali, Dubai

Bapetco
Egypt
74 miles; 16 inches
55 miles; 16 inch loop from BED-2 to Amiriyah
19 miles; BED-2 to BED-3
Cost: $60,000,000

Khalda Petroleum Co.
Egypt
59 miles; 10 inches
Cost: $15,000,000
Salam to Mersa Matruh

Gaz de France
France
44 miles; 24 inches
Cost: $30,000,000
Salam to Lacq

BEB
Germany
100 miles; medium diameter
Cost: $50,000,000
Achim to Salzwedel

EVG
Germany
106 miles; 32 to 40 inches
Cost: $80,000,000
Vitzeroda to Gera

Erdgasversogungsgessellschaft
Germany
200 miles
Cost: $150,000,000
Vitzeroda to Niederhohndorf, Saxony

Kombinat Gasanlagen
Germany
155 miles; medium diameter
Cost: $75,000,000
Philippsthal to Sayda

Midas GmbH
Germany
Joint venture Wintershall/OMV
348 miles; 32 inches
Cost: $200,000,000
Rysum to Ludwigshafen

Ruhrgas AG
Germany
153 miles; 48 inches
Werne to Schluchtern
49 miles; 40 inches
Lauterbach to Vitzeroda
15.5 miles; 24 inches
Vinnhorst to Ahlten
Cost: $150,000,000

Statoil
Germany
44 miles; 42 inches
Cost: $100,000,000
Emden to Etzel

Wintershall AG
Germany
350 miles; large diameter
Cost: $300,000,000
Rysum to Ludwigshafen

Hungarian Oil & Gas Trust
Hungary
22 miles; 31 inches
Cost: $20,000,000
Pilisv to Dorog

Gujarat Gas Co., Ltd.
India
330 miles; medium diameter
Cost: $150,000,000
Gas network in Gujarat state

Oil and Gas Commission
India
175 miles; medium diameter
Cost: $150,000,000
East and West Godavari districts of Andhra Pradesh
95 miles; medium diameter
Cost: $75,000,000
Southern loop, Western Offshore Integrated Development Project

Bord Gais Eireann
Ireland
45 miles; 30 to 36 inches
Cost: $2,000,000
Easington to Pauli
120 miles offshore line; 50 miles onshore line
Cost: $360,000,000
Gas line from Moffat, Scotland, to Dublin, Ireland

Agip
Italy
84 miles
Cost: $20,000,000
Libya - Bu Attifel field to gas treatment plant

Petronas
Malaysia
109 miles; 30 inches
Cost: $100,000,000
Labis to Singapore; Plentong to Pasir Gudang
197 miles; 6, 8, 16, and 26 inches
Cost: $365,000,000
Several fields offshore Sarawak

Ministry of Energy
New Zealand
140 miles; 14 to 20 inches
Cost: $70,000,000
Huntly to Marsden power stations

Statoil
Norway
524 miles; 30 to 40 inches; Zeepipe line
Sleipner to Zeebrugge, Belgium
80 miles; 36 inches; Zeepipe Troll to Heimdal
95 miles; 40 inches; Zeepipe Troll to Sleipner
150 miles; 20 inches; Sleipner to Karsto
Cost: $1,500,000,000

Petroleum Development Co.
Oman
68 miles; medium diameter
Cost: $30,000,000
Lekhwair field to domestic gas grid

Pipeline Construction

We design and construct for you pipelines and products-distribution-systems for transport of gas, liquids and slurry. ● in all diameters ● including construction of all underground facilities and utilities, blasting, tunnelling, river crossings ● with all civil and special constructions ● with tank farms and pumping-, pressure reducing- and boosting stations ● with treatment-, metering- and filling systems.

Pipeline-Service – Any Size – Any Length – Anywhere

- Pressure testing (stress- and tightness test using water, air or gas) of new and old oil-, gas- and water-pipelines.
- Leak detection.
- Dewatering, drying (methanol, air, vacuum, or nitrogen) and conservation of pipelines.
- UltraScan ultrasonic pigs for internal and external corrosion and lamination surveys.
- Cleaning pipelines with various special cleaning pigs.
- Pigging with viscous gel.
- Caliper surveys – locating dents and buckles.
- Corrosion and crack detection.

Worldwide

PREUSSAG

Preussag Anlagenbau GmbH
Pipeline Construction
P.O.Box 89 02 45 · D-3000 Hannover 89
Phone (5 11) 86 05-0 · Teletex 17-5118605
Telefax (5 11) 86 05-3 00
Federal Republic of Germany

Sui Gas Transmission Co.
Pakistan
182 miles; 20 inches
Cost: $50,000,000
Sui to Karachi

Petroleos del Peru
Peru
364 miles; 26 inches
64 miles; 8 inches
Cost: $50,000,000
Camisea-Cuzco to Callao-Lima

Portuguese government
Portugal
200 miles
Cost: $800,000,000
Lisbon to Braga near Spanish border plus distribution systems - five year program

Enagas
Spain
300 miles; 26 inches
Cost: $481,000,000
Seville to Madrid
200 miles; 12 to 24 inches
Cost: $60,000,000
Redes Navarra area

Stoseb
Sweden
150 miles gas grid around Stockholm
Cost: $30,000,000

Al-Furat Petroleum
Syria
335 miles; 8 to 18 inches
275 miles; 18 inches; Omar field to Damascus
60 miles; 8 to 12 inch lines to Thayyem, Tishreen, Adra
Cost: $150,000,000

Chinese Petroleum Corp.
Taiwan
190 miles; 8 to 24 inch loop lines
Cost: $50,000,000
Yungan to Tunghsiao

Petroleum Authority of Thailand
Thailand
45 miles; 16 to 18 inches
Cost: $15,000,000
Gas main grid around Bangkok
Second line from southern Thailand to Bangkok
425 miles offshore; 500 miles from Khanom to Bangkok
Cost: $600,000,000
100.6 miles; 24 inches; Erawan to Khanom district
106.3 miles; 32 inches; Erawan field line
121 miles; 32 inches; Texas Pacific field to Erawan
Cost: $150,000,000

Botas
Turkey
400 miles up to 12 inches
Bursa city distribution system
510 miles; large diameter; 310 miles Bursa to Izmir and 210 miles Izmit to Karabuk
Cost: $150,000,000

Amoco Exploration Co.
UK
254 miles; 36 inches
Cost: $225,000,000
Central Area Transmission system
Everest and Lomon offshore fields to Teesside

Gas Transmission U.K. Ltd.
UK
180 miles; 30 to 36 inches
Cost: $150,000,000
Bacton to Thames Estuary, east of London

Kinetica, Ltd. (Conoco PowerGen)
UK
175 miles; 36 inches
Cost: $30,000,000
Lincolnshire coast to power stations

Scottish Area Gas Evacuation System (Sage)
UK
150 miles; 24 inch
Cost $475,000,000
Mobil North Sea Marathon Oil, Beryl North Sea field to St. Fergus

Shell United Kingdom Exploration & Production
UK
118 miles; 24 inches
Cost: $75,000,000
Bacton to Shell Haven refinery on the Thames Estuary

Total Oil Marine
UK
110 miles; 22 inches
Cost: $75,000,000
Caister field, UK North Sea, to Killingholme

Petroleos de Venezuela
Venezuela
28 miles; 16 inches
Cost: $5,000,000
Offshore Margarita Basin fields to Mapire Bay

Energoinvest with INA
Yugoslavia
80 mile line connecting eastern and western gas networks
Cost: $5,000,000

Yugoslavian government
Yugoslavia
650 miles; small to medium diameter; 160 miles main line; 415 miles main and distribution lines; 75 miles urban mains
Cost: $100,000,000

FUTURE PROJECTS

Crude Oil Pipelines

Broome Oil Pipeline Systems
Australia
300 miles; medium diameter
Cost: $85,000,000
Canning basin area of Western Australia

National Iranian Oil Co.
Iran
600 miles; large diameter
Cost: $500,000,000
Gach Sarn field, near Persian Gulf to Port of Jask, Gulf of Oman

Shell Pipeline Petroleum Dev.
Nigeria
43 miles; 20 to 24 inches
Cost: $50,000,000
Opukushi to Forcados terminal

Tazama Pipeline Ltd.
Tanzania
670 miles; 8 to 24 inches
Cost: $201,000,000
Tanzania to Zambia

Botas
Turkey
2,976 miles; large diameter
Cost: $2,500,000,000
Agajari to Iskenderun Gulf (between Iran and Turkey)

Products Pipelines

Sonatrach
Algeria
500 miles; medium diameter
Cost: $125,000,000
Southeast Algerian fields to Hassi Messaoud

Oil India Ltd.
India
826 miles; medium diameter
Cost: $200,000,000
Khandia to Bhatinda

Laos government
Laos
260 miles; medium diameter
Cost: $85,000,000
Vinh, Vietnam to Vientiane, Laos

Statoil
Norway
140 miles; 20 inches
Cost: $420,000,000
Condensate line from Sleipner field to Karstoe

British Petroleum
UK
150 miles; 24 inches
Cost: $100,000,000
Bruce field to Forties field, UK North Sea

Natural Gas Pipelines

Argentine government
Argentina
600 miles; 10 to 24 inches
Cost: $300,000,000
Campo Duran to Chaco, Argentina

Gas del Estado
Argentina
350 miles; 18 inches
Santa Fe, Argentina, to Montevideo, Uruguay
775 miles; 30 inches
Salta Province, Argentina, to Rio Grande de Sul state, Brazil
Cost: $300,000,000

Department of Resources & Energy
Australia
3,000 miles; large diameter
Cost: $3,000,000,000
Transcontinental Australia pipeline

Mt. Isa Mines Ltd.
Australia
500 miles; medium diameter
Cost: $75,000,000
Cooper Basin fields to Mt. Isa

Petrobangla
Bangladesh
159 miles; 6, 16, and 20 inches
Cost: $48,800,000
Kailashtila field to grid in Ashuganj

Distrigaz
Belgium
91 miles; various inches
Zeebrugge to Blaregnies

Petrobras
Brazil
1,175 miles; large diameter
Cost: $400,000,000
1,050 miles from Urucu region to Carajas; 125-mile spur to Manaus. Extensions to Belem and Sao Luis could add 700 miles

Y.P.F.B. Petrobras
Brazil
1,010 miles; 24 inches
Cost: $400,000,000
Brazil-Bolivia border to Sao Paulo, Brazil

TransAsean Consortium
Brunei-Indonesia-Malaysia-Philippines-Thailand
5,000 miles; large diameter
Cost: $3,000,000,000
Fields offshore Thailand through Malaysia, Indonesia, and Brunei to the Philippines

China National Offshore Oil Corp.
China
60 miles; 30 inches
Cost: $10,000,000
Yacheng field, South China Sea to Hainan Island

China Offshore Gas Utilization Corp.
China
680 miles; 24 inches
Cost: $300,000,000
Hainan Island to Guangzhou

Dubai Natural Gas Co.
Dubai
200 miles; large diameter
Cost: $150,000,000
Qatar's North field to Jebel Ali, Dubai

Ministry of Trade and Industry
Finland
250 miles; 20 inches
Cost: $80,000,000
Rihimaki across Gulf of Bothnia to Gaevle, Sweden

Kombinat Gasanlagen
Germany
155 miles; medium diameter
Cost: $40,000,000
Philippsthal to Sayda

Wintershall AG
Germany
350 miles; large diameter
Cost: $200,000,000
Rysum to Ludwigshafen

State Oil and Gas Trust
Hungary
200 miles; 28 to 32 inches
Cost: $125,000,000
Beregdoroc to Szeged
300 miles; large diameter
Grid linking Hungary, Austria, Czechoslovakia and Yugoslavia

Gas Authority of India Ltd.
India
900 miles; large diameter
Bombay to Bangalore
7,500 miles; large diameter
National gas grid
Cost: $3,000,000,000

Pertamina
Indonesia
839 miles; 24 and 30 inches
545 miles; 24 inches; Block B fields, South China Sea, to Matak, Batam and Duri oil field in Sumatra. Phase 2: 294 miles, 30 inches, Natuna field to Natuna Island and Matak
Cost: $2,000,000,000

National Iranian Oil & Gas Co.
Iran
1,900-mile line from Iran to Pakistan, India, and possibly China
Cost: $11,000,000,000
World Bank to aid financing

Korea Gas Corp.
Korea
825 miles; large diameter
Cost: $2,200,000,000
Network connecting 20 major cities

Agip
Libya
350 miles; large diameter
Cost: $3,500,000,000
Bourri field offshore Libya to Italy

Libyan government
Libya
448 miles; 30 inches
400 miles; al Brika to Khoms
48 miles; 30 inches; sirte basin
Cost: $2,000,000,000

Trans Mexico
Mexico
1,315 miles; 30 inches
Cost: $1,000,000,000
Line following Mexico-U.S. border; laterals to U.S. border

Midgard Field Partners
Norway
300 miles; large diameter
Cost: $300,000,000
Midgard field to existing Norwegian gas grid

Norske Shell
Norway
100 miles; large diameter
Cost: $50,000,000
Troll field to processing plant at Oeygarden or Bergen

Qatar Pakistan
1,000 mile gas line from Qatar to Karachi, Pakistan. Feasibility study completed
Cost: $3,000,000,000

Trinidad Tobago
Trinidad Tobago
800 miles; large diameter
Cost: $2,500,000,000
Trinidad to Puerto Rico to other Caribbean islands

Sydkraft
U.S.S.R.-Sweden
400 miles; large diameter
Cost: $350,000,000
Eastern U.S.S.R. through Latvia, across the Baltic Sea to southeast Sweden

U.S.S.R.
U.S.S.R.
1,075 miles; large diameter
375 miles from Stokmanovskoye field in Barents Sea to Murmansk; 650 miles from Murmansk to Leningrad
Cost: $3,000,000,000

U.S.S.R.-Korea
U.S.S.R.-Korea
2,700 miles; large diameter
Cost: $3,000,000,000
Vilyui in Eastern Siberia to North and South Korea